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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,273	09/23/2005	Hiroshi Osawa	Q75080	1238

23373 7590 07/10/2008  
SUGHRUE MION, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
SUITE 800  
WASHINGTON, DC 20037

EXAMINER
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BERNATZ, KEVIN M

ART UNIT	PAPER NUMBER
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1794

NOTIFICATION DATE	DELIVERY MODE
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07/10/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

SUGHRUE@SUGHRUE.COM

<b>Office Action Summary</b>	<b>Application No.</b> 10/550,273	<b>Applicant(s)</b> OSAWA, HIROSHI	
	<b>Examiner</b> Kevin M. Bernatz	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/23/05; 11/28/06; 12/7/07</u> .                              | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Preliminary amendments to claims 3 – 11 and 14, filed on September 23, 2005, have been entered in the above-identified application.

### ***Priority***

2. Applicant's claim for the benefit of a prior-filed provisional application is acknowledged. Applicant has not complied with the conditions for receiving the benefit of an earlier filing date under 37 CFR 1.78(a)(5)(iv) as follows:

“If the prior-filed provisional application was filed in a language other than English and both an English-language translation of the prior-filed provisional application and a statement that the translation is accurate were not previously filed in the prior-filed provisional application, applicant will be notified and given a period of time within which to file, in the prior-filed provisional application, the translation and the statement. If the notice is mailed in a pending nonprovisional application, a timely reply to such a notice must include the filing in the nonprovisional application of either a confirmation that the translation and statement were filed in the provisional application, or an amendment or Supplemental Application Data Sheet withdrawing the benefit claim, or the nonprovisional application will be abandoned. The translation and statement may be filed in the provisional application, even if the provisional application has become abandoned.” (emphasis added).

***Specification***

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: after "Medium", insert the phrase "Including a CoCrZr Alloy Magnetic Layer Anti-ferromagnetically Coupled With A Second Magnetic Layer".

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 – 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bertero et al. (U.S. Patent No. 6,899,959 B2 and/or U.S. Patent App. No. 2003/0152805 A1) in view of Shiroishi et al. (IEEE Trans. Mag., 24(6), 1988, 2730 -2732).

Regarding claims 1 and 12, Bertero et al. disclose a magnetic recording medium (*Title and Abstract*) comprising at least a non-magnetic undercoat layer (*Figure 6, element 104 and relevant disclosure thereto*), a first magnetic layer (*element 106*), a non-magnetic coupling layer (*element 108*), a second magnetic layer (*element 110*), and a protective layer (*element 112*), in this order, on a non-magnetic substrate (*element 102*); wherein the second magnetic layer is anti-ferromagnetically coupled with

the first magnetic layer (*Abstract and see Figure 11*); and the first magnetic layer is made of a relatively low Hc and Ku material, such as CoCrTa or a soft magnetic material such as CoTaZr (*col. 5, line 44 bridging col. 6, line 13*).

While Bertero et al. does teach that “layer **106** can have 0 to 10 at % X, where X is one or more other elements, e.g. one or more of Cu, Mo, W, V, Si, C, Pd, Ru, Ir or Y”, Bertero et al. fail to explicitly disclose using a CoCrZr alloy.

However, Shiroishi et al. disclose the functional equivalence between CoCrTa and CoCrZr magnetic layers for both improved corrosion resistance and coercivity (*entire disclosure*).

Substitution of functional equivalents requires no express motivation as long as the prior art recognizes the functional equivalency. In the instant case, CoCrTa and CoCrZr magnetic layers are functional equivalents in the field of magnetic layers possessing good corrosion resistance and good relatively low coercivities (*relative to the high coercive force alloys disclosed in Bertero et al. for element 110*). *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

Regarding claims 2 and 13, Bertero et al. disclose additional layers meeting Applicants' claimed limitations (*Figure 11*).

Regarding claim 3, Shiroishi et al. disclose alloy percentages meeting Applicants' claimed limitations (*page 2730: Results and Discussion section*).

Regarding claim 4, Bertero et al. disclose thickness values meeting Applicants' claimed limitations (*col. 4, lines 51 – 59 and examples*).

Regarding claim 5, Bertero et al. disclose coupling layers meeting Applicants' claimed material and thickness limitations (*ibid*).

Regarding claim 6, Bertero et al. disclose underlayers meeting Applicants' claimed material limitations (*col. 4, lines 60 - 63 and examples*).

Regarding claim 7, Bertero et al. disclose multilayer underlayers meeting Applicants' claimed limitations (*examples; e.g. col. 7, lines 8 - 44*).

Regarding claims 8 and 9, Bertero et al. disclose substrates meeting Applicants' claimed limitations (*col. 4, lines 40 - 50*).

Regarding claims 10 and 11, Bertero et al. disclose second and third magnetic layers meeting Applicants' claimed limitations (*Figure 11 and col. 5, line 44 bridging col. 6, line 13*).

Regarding claim 14, the claimed apparatus limitations are nominal apparatus limitations necessarily present in a recording and reproducing apparatus (*see also Bertero et al., Figure 12 and relevant disclosure thereto*).

### **Conclusion**

6. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure. Hanawa et al. (U.S. Patent App. No. 2002/0122960 A1) teach an AFC'ed recording medium wherein the magnetic layers are generically disclosed to include Co alloys with the possibility of the addition of Cr and Zr (*Paragraphs 0066 – 0069 and 0130 - 0138*). Shiroishi et al. (U.S. Patent No. 5,147,732) disclose a non-AFC'ed recording medium using CoCrTa and/or CoCrZr magnetic layers (*examples*).

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Bian et al. (U.S. Patent App. No. 2006/0046102 A1) disclose a similar AFC'ed recording medium including a CoCrZr slave (i.e. "first") magnetic layer, but Bian et al. fails to qualify as prior art since it's effective filing date is August 31, 2004.

7. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Kevin M. Bernatz whose telephone number is (571) 272-1505. The Examiner can normally be reached on M-F, 8:30 AM - 5:00 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Rena Dye can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Kevin M Bernatz, PhD/  
Primary Examiner, Art Unit 1794

July 3, 2008